CLAIMS:

1. A gain selector stage for selecting a gain for a signal processing circuit for amplifying digital audio signals, the stage comprising: an input for receiving a parameter of said signal; adjuster for adjusting said parameter dependent on a received volume control signal; and selector for selecting a gain dependent on said adjusted parameter.

2. A selector stage according to claim 1 wherein the received volume control signal is input to a processor before being passed to the adjuster.

3. A selector stage according to claim 2 wherein the processor comprises a log converter and/or a scaling means.

4. A selector stage according to claim 1 wherein the adjuster comprises a log converter for log converting the received parameter and an adder for adding the volume control signal to the log parameter.

5. A selector stage according to claim 1 wherein the parameter is dependent on the peak value of the received signal.

6. A selector stage according to claim 5 wherein the parameter is a peak level envelope signal.

7. A selector stage according to claim 1 further comprising an input to receive a threshold signal; a comparator for comparing an output of the adjuster with the threshold signal; and wherein the selector selects the gain dependent on the comparison.

8. A selector stage according to claim 7 wherein the threshold signal is input to a processor before being passed to the comparator.

9. A selector stage according to claim 2 wherein the processor comprises a log converter and/or a scaling means.

10. A selector stage according to claim 7 wherein, when the output of the comparator indicates a gain adjustment is required, the gain is selected using a variable gain function.

11. A selector stage of claim 7 wherein the gain is selected using a variable gain function:

(a) when the output of the adjuster is greater than the threshold signal and a negative signal polarity; or

(b) when the output of the adjuster is less than the threshold signal and a positive signal polarity is utilised.

12. The gain selector of claim 10 wherein the variable gain function, or a factor of the variable gain, is:

$$K = 2^{lgK} \text{ where}$$

$$lgK = lgGs + \mathrm{m}(lgGV + lgTA)$$

where K is the gain, *lgGs* is the volume control signal, *lgGV* is the output of the adjuster, *lgTA* is the threshold signal and m is a value indicative of a predetermined operational characteristic curve.

13. A signal processing circuit for amplifying a digital audio signal, comprising:
parameter determining processor for determining a parameter of said signal;
a gain selector according to claim 1; and
amplifier for amplifying said signal according to said gain.

14. A circuit according to claim 13 wherein the parameter determining processor is a peak detector.

15. A circuit according to claim 14 wherein the peak detector output is dependent on the peak levels in the signal waveform and a time dependent decay characteristic, wherein the decay characteristic is further dependent on the frequency of said signal.

16. A circuit according to claim 15 wherein the peak detector comprises a disabler for disabling the decay characteristic until the signal changes polarity.

17. A circuit according to claim 13 further comprising a delay for delaying said signal prior to said amplification in order to first determine said gain characteristic.

18. A peak detector comprising:

an input for receiving a signal;

peak level processor for determining peak levels in the signal; and

an output for outputting a signal dependent on said peak levels and a time dependent decay characteristic, wherein the decay characteristic is further dependent on the frequency of said received signal.

19. A detector according to claim 13 wherein the output comprises a disabler for disabling the decay characteristic until the signal changes polarity.

20. A signal level detector comprising:

an input to receive an input audio signal;

amplitude processor operable in a decay mode, being when the input audio signal is smaller than a previous output signal, whereby in the decay mode, the processor is configured to generate a signal for decreasing the amplitude of a signal to be output; and

logic device for controlling the operation of the amplitude processor in the decay mode such that the processor only generates a signal in the decay mode upon receipt of a trigger from the logic device, whereby the trigger is related to the frequency of the input audio signal.

21. A signal level detector comprising:

an input to receive an input audio signal;

amplitude processor configured to generate a signal for scaling the amplitude of a signal to be output; and

logic device for controlling the operation of the amplitude processor such that the processor only generates the signal for scaling upon receipt of a trigger from the logic device, whereby the trigger is related to the frequency of the input audio signal.

22. The signal level detector of claim 20 further comprising a comparator for determining when a change of sign occurs, wherein the comparator is associated with the logic device, and the logic device sends a trigger to the amplitude processor when a change of sign of the input signal occurs.

23. The signal level detector of claim 20 wherein the logic device comprises an input for receiving a timeout signal, and the logic device sends a trigger to the processor when a timeout signal is received.

24. The signal level detector of claim 23 further comprising a timeout counter which is configured to generate the timeout signal after a time period passes, corresponding to the lowest frequency of the input signal, without a change of sign occurring.

25. A method of determining a signal level of an audio signal comprising:

receiving an input audio signal;

comparing the input audio signal with a previous output signal to obtain a difference signal;

generating a scaled signal by scaling the difference signal using an attack coefficient or a decay coefficient, depending upon the comparison;

combining the scaled signal with the previous output signal to obtain a signal, indicative of the signal level of the input audio signal, characterised in that the method comprises:

controlling the generation of the scaled signal when scaled by the decay parameter, using a trigger related to the frequency of the input audio signal.

26. The method of claim 25 wherein only the generation of the indicative signal scaled signal by a decay parameter is controlled.

27. The method of claim 25, wherein the trigger is generated when a change of sign of the input signal occurs or a timeout occurs.

28. An integrated circuit comprising a signal level detector according to claim 20.

29. An integrated circuit comprising a gain selector stage according to claim 1.

30. Audio equipment comprising an integrator circuit according to claim 28.

31. Audio equipment comprising an integrator circuit according to claim 29.

32. Processor control code to, when running, implement the signal processing circuit of claim 13.

33. A carrier carrying the processor control code of claim 31.

34. The signal level detector of claim 21, further comprising a comparator for determining when a change of sign occurs, wherein the comparator is associated with the logic device, and the logic device sends a trigger to the amplitude processor when a change of sign of the input signal occurs.

35. The signal level detector of claim 21 wherein the logic device comprises an input for receiving a timeout signal, and the logic device sends a trigger to the processor when a timeout signal is received.

36. The signal level detector of claim 35, further comprising a timeout counter which is configured to generate the timeout signal after a period of time passes, corresponding to the lowest frequency of the input signal, without a change of sign occurring.